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Planning Technology Friendly School Buildings

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This article looks at ways in which schools buildings designed for today and tomorrow can provide superior environments for learning by keeping pace with rapidly evolving technologies that have redefined the educational landscape.

The Classroom as Global Media Center

The Wireless Classroom: Today's classroom is often a multi-zone, interdisciplinary, hands-on learning studio where different modes of learning are occurring at the same time. From a technology standpoint, this kind of learning studio requires that some or all students be simultaneously able to access the school's network and the



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Internet. The best way to accomplish this is for students and teachers to utilize either their own or school-owned wireless laptop computers.

Wireless classrooms can now be created with little added cost because “access points” that beam network signals to the computers are very inexpensive and most laptops are now sold “wireless ready”. Bandwidth problems that once plagued wireless networks are not much of a concern now with robust systems delivering an impressive 54 Mbps. As for security concerns with wireless networks, they are being addressed via reliable encryption technologies.

Of course, students also need access to hard-wired desktops computers distributed within the central media center or in strategic locations throughout the school building to work on high-end, high-bandwidth applications.

Data Projectors: Laptops in class are used not only to conduct independent study and for group projects, but also to make presentations. Students should be able to hook up their laptop computers either from wired data ports or wirelessly to ceiling-mounted data projectors. All classrooms should be equipped with these projectors – not an unrealistic expectation given their rapidly falling prices.

Wall-mounted Plasma Monitors: Modern Plasma screens (preferably 42” High Definition compatible) are superior to their old 32” analog TV counterparts. They are easy to install, have a wider angle of view, text-based programs are more visible and readable, they can be connected to the school network and to the Internet, receive HDTV signals, produce less heat, can serve as information hubs that carry programming throughout the school or to selected locations and instantly connect the classroom to people and places worldwide. Plasma screens are more expensive than CRT monitors but their prices are also falling rapidly.

Technologies Beyond the Classroom

Printing and Storage: Ideally, students should have access to high-quality black and white and color laser printers and scanners. Such shared equipment should preferably be located in accessible areas on each floor. New and renovated schools should have secure, ventilated areas to store high-priced equipment like laptop computers, digital and video cameras. While laptop carts may soon give way to individual laptop or tablet computers, for the next few years at least, these carts should also be stored securely after school hours in rooms



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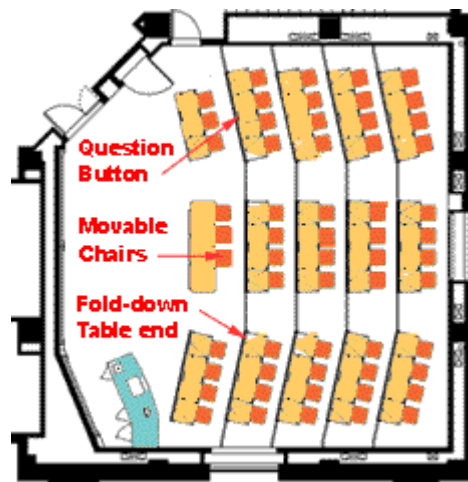
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where the carts can remain plugged in to charge the computers.

Distance Learning: Schools should develop appropriate distance learning facilities to take advantage of the increased availability of specialty courses on the Internet and access to experts from all around the world willing and able to work with students. The quality of the facility will vary according to the available budget. At the low end of the cost scale, a basic room equipped with a large monitor with a central shared camera and microphone will suffice. At the higher end, and particularly if a facility may be rented out after school hours or used for adult education, it can be designed so that every student will have access to a microphone. In such facilities, wall-mounted cameras track and focus on individual speakers as well as the room at large making the distance learning experience as close to face-to-face, on-site learning as possible. [MIT Lab]



Integrated Systems: Schools will want to consider combining their telephone, public address, clock, security and audio/video transmission system with the school network. Such integrated systems are cheaper and, by affording greater flexibility of design, they can be better tailored to the needs of the building with changes over time.



Fewer High-technology Specialty

Labs: The rapid rate of technology change guarantees that highly specialized rooms and equipment will soon become obsolete. This problem can be addressed by designing spaces with generalized, mobile furnishings and equipment with multiple uses. Here, students can engage in a variety of science, art and technology projects.

High-Performance Technology:

Sustainable technologies like ground source heat pumps, photo-voltaic cells, windmills, rain water collection and energy management systems that are good for the health and well being of the building also present great opportunities for learning. The idea of the school as a living, breathing “three-dimensional textbook” whose systems can be monitored, analyzed and adjusted has value not only because it engages students in running and maintaining an efficient building, but also by helping them to become better scientists, researchers and responsible custodians of the planet.

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